

## REMARKS

### Claim Objections

In the Office Action dated May 13, 2010, claims 1 and 3-5 have been objected to on the grounds that the reference characters are not enclosed within parentheses.

In this connection, the Applicant respectfully brings the Examiner's attention to the listing of claims in the preliminary amendment, which was filed concurrently with filing the application. Specifically, the amendment document entitled "Preliminary Amendment Before Examination" filed on July 26, 2006 includes a listing of claims where all the reference characters have been removed. Based on a check of the USPTO's Image File Wrapper on public PAIR, it is noted that the contractor placed this amendment document prior to another amendment entitled *"Preliminary Amendment for the Purpose of Calculating Claim fees"*, also filed on July 26, 2006, in which to cancel multiple dependencies, but without further amendments to delete the reference characters. Therefore, it appears that the Examiner may have considered the other listing of claims which does not contain the further amendments.

Accordingly, the Applicant respectfully requests the Examiner to withdraw the claim objections, since the claim listing in the *"Preliminary Amendment Before Examination"* has removed the reference characters. Assuming that the claim objections in this respect have been rendered moot, the claim identifiers indicated in the

present amendments are with reference to amended claims submitted in the above-mentioned preliminary amendment.

### **Amendments to the Specification**

The Applicant has carefully considered the prior art rejection raised in the Office Action dated May 13, 2010. As a result, amendments have been made in an effort to more clearly and distinctly recite the invention.

Specifically, the last paragraph of claim 1 has been amended as follows:

“wherein each individual optical modulation element in each pre-selected region of the liquid crystal display modulator has ~~having~~ a first end of an optical light guide optically coupled thereto, and a second end of one optical light guide from each pre-selected region of the liquid crystal display modulator being optically coupled to one of the pre-selected number of pixels on the planar view plane, so and wherein each pixel is formed by at least three optical light guides, each of whose first end is optically coupled to each of a red, green and blue light emitting diode, respectively, mediated by at least three different pre-selected regions of the liquid crystal display modulator.”

Support for these amendments is found throughout the application as filed, for example, description page 6, lines 6-15.

Description pages containing the Summary of Invention have also been amended to be commensurate with the amended claim 1.

Applicant submits that the amendments are to more clearly and accurately recite the present invention. It is respectfully submitted that all the amendments made herein

are supported by the specification as originally filed, and therefore no new matter is added by these amendments.

### **Patentability of Claims Over the Cited References**

The Examiner has rejected claims 1-5 as being obvious over Sonehara et al. (US Patent No. 5,053,765) in view of Parker et al. (US Patent No. 6,224,216). Applicants respectfully request withdrawal of this rejection in view of the following discussion.

The present claim 1, as amended herein, recites:

*“wherein each individual optical modulation element in each pre-selected region of the liquid crystal display modulator has a first end of an optical light guide optically coupled thereto, and a second end of **one optical light guide from each pre-selected region** of the liquid crystal display modulator being **optically coupled to one of the pre-selected number of pixels on the planar view plane**,.....”*

Furthermore, in an effort to more explicitly define the invention, claim 1 has been amended to recite:

*“.....each pixel is formed by **at least three optical light guides**, each of whose first end is **optically coupled to each of a red, green and blue light emitting diode, respectively**, mediated by at least three different pre-selected regions of the liquid crystal display modulator.”*

As recited in the amended claim 1, the present invention teaches using a set of optical fibers wherein each fiber is dedicated to one color of light only to create an array

of RGB pixels on the viewing surface. In addition, according to the claimed invention, light from each light emitting diode is focused onto a pre-selected region of the liquid crystal display modulator. These inventive features of the claimed invention have achieved the technical solution of eliminating the need for either color filters or frame-sequential color methods.

It is respectfully submitted that none of the cited references, Sonehara et al. and Parker et al., either alone or in combination, teach these inventive features of the claimed invention.

Firstly, referring to Sonehara, while this reference teaches the use of optical fibers to receive pixel outputs from LCD displays and then re-arrange the fibers to produce a viewing surface at the output of the fibers, this is different in arrangement from the arrangement of the pixels on the LCD. Sonehara teaches improvement in uniformity and quality of the image by using fiber re-arrangement.

However, Sonehara is clearly teaching away from using each fiber to carry only one of three colors of light and the subsequent weaving of said single color fibers to produce an array of R,G,B pixels on the viewing surface, which is now explicitly recited in the amended claim 1. Instead, Sonehara teaches that each fiber corresponds to a trio of R, G and B picture elements, or a multiplicity of picture elements, where the plurality of trios form a striped color filter, or mosaic color filter. It is to be noted that the color

filters required by Sonehara cause 4X loss in brightness, whereas the present claimed invention has very advantageously eliminated the use of the color filters.

Parker teaches the generation of white light by mixing the light from R, G and B fibers. This white light is then sent to the LCD or DLP unit. Frame-sequential color methods are then used to create a full color image. On page 5 lines 9-10 of the Office Action, the Examiner has held that Parker teaches *"light from each light emitting diode being focussed onto a pre-selected region of the liquid crystal display modulator"*. The Applicant respectfully disagrees.

Specifically, according to Parker, the light from the LEDs is mixed and combined ***before reaching the LCD***. On the contrary, the present invention uses the fibers to bring separate colors to the viewing surface of the display and then combines the different single color fibers ***on the viewing surface*** to produce an array of R, G, B pixels. It is also to be noted that Parker was able to eliminate color filters, but it requires very high frame rate LCD displays which are not commonly available. In contrast, according the claimed invention, the need for either color filters or frame-sequential color is eliminated.

In conclusion, it is respectfully submitted that Sonehara and Parker do not teach the fundamental aspects of the claimed invention which uses a set of optical fibers wherein each fiber is dedicated to one color of light only to create an array of RGB pixels, thereby eliminating the need for either color filters or frame-sequential color

methods. Furthermore, light from each light emitting diode being focused onto a pre-selected region of the liquid crystal display modulator is different from the teaching of Sonehara and Parker. Accordingly, combining the teaching of Sonehara and Parker would in no way lead to the claimed invention which is now more clearly and explicitly defined in the amended claim 1.

In view of the differences between the claimed invention and the cited references, the Examiner is respectfully requested to withdraw the rejection, and consider that the subject matter of claims 1-5 is new and inventive over the cited references.

An earnest effort has been made to place this application in condition for allowance which action is respectfully solicited.

Should the Examiner have any questions regarding the allowability of the claims with respect to the art, it would be appreciated if the Examiner would contact the undersigned attorney-of-record at the telephone number shown below for further expediting the prosecution of the application. Applicants would also like to request in advance that they would be grateful for the opportunity to meet in person with the Examiner if another Examiner's Report is issued.

Respectfully submitted,

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